

1 329. (currently amended) A water-based drilling fluid comprising:

2 an aqueous base;

3 about 7.5 lb./bbl. water soluble polymer; and,

4 about 2 lb./bbl. surfactant in association with said water soluble polymer;

5 said water based drilling fluid being non-aerated.

6 wherein said water soluble polymer, said surfactant, and said association provide said

7 water- based drilling fluid with effective rheology and fluid loss control properties

8 comprising low shear viscosity.

1 330. (Previously presented) The water-based drilling fluid of claim 329 wherein said

2 surfactant is selected from the group consisting of alkyl sulfates, alkyl ether sulfates, alkyl

3 sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers, and phosphated esters

4 comprising about 8 to about 18 carbon atoms, alkali metal salts thereof, and combinations

5 thereof.

1 331. (Previously presented) The water-based drilling fluid of claim 329 wherein said

2 surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

1 332. (Previously presented) The water-based drilling fluid of claim 329 wherein said

2 surfactant comprises an alkyl ether sulfate.

1 333. (Previously presented) The water-based drilling fluid of claim 329 wherein said

2 surfactant is sodium tridecyl ether sulfate.

1 334. (Previously presented) The water-based drilling fluid of claim 329 wherein said

2 low shear viscosity is about 70,000 cP or more upon exposure to 0.3 rpm, measured with a

3 Brookfield viscometer at 75 °F.

1           335. (Previously presented) The water-based drilling fluid of claim 329 wherein said  
2 low shear viscosity is about 100,000 cP or more upon exposure to 0.3 rpm, measured with a  
3 Brookfield viscometer at 75 °F.

1           336. (Previously presented) The water-based drilling fluid of claim 331 wherein said  
2 low shear viscosity is about 70,000 cP or more upon exposure to 0.3 rpm, measured with a  
3 Brookfield viscometer at 75 °F.

1           337. (Previously presented) The water-based drilling fluid of claim 332 wherein said  
2 low shear viscosity is about 70,000 cP or more upon exposure to 0.3 rpm, measured with a  
3 Brookfield viscometer at 75 °F.

1           338. (Previously presented) The water-based drilling fluid of claim 333 wherein said  
2 low shear viscosity is about 70,000 cP or more upon exposure to 0.3 rpm, measured with a  
3 Brookfield viscometer at 75 °F.

1           339. (Previously presented) The water-based drilling fluid of claim 329 further  
2 comprising a concentration of non-toxic water emulsifiable material as an internal phase.

1           340. (Previously presented) The water-based drilling fluid of claim 339 wherein said  
2 concentration is from about 2 to about 20 vol. %.

1           341. (Previously presented) The water-based drilling fluid of claim 329 wherein said  
2 fluid consists essentially of additives other a solid bridging agent.

1           342. (Previously presented) The water-based drilling fluid of claim 331 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           343. (Previously presented) The water-based drilling fluid of claim 334 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           344. (Previously presented) The water-based drilling fluid of claim 336 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           345. (Previously presented) The water-based drilling fluid of claim 337 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           346. (Previously presented) The water-based drilling fluid of claim 329 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           347. (Previously presented) The water-based drilling fluid of claim 341 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           348. (Previously presented) The water-based drilling fluid of claim 342 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           349. (Previously presented) The water-based drilling fluid of claim 329 wherein said  
2 water soluble polymer is selected from the group consisting of water soluble starches and  
3 modified versions thereof, water-soluble polysaccharides and modified versions thereof, water-  
4 soluble celluloses and modified versions thereof, water soluble polyacrylamides and copolymers  
5 thereof, and combinations thereof.

1           350. (Previously presented) The water-based drilling fluid of claim 341 wherein said  
2 water soluble polymer is selected from the group consisting of water soluble starches and  
3 modified versions thereof, water-soluble polysaccharides and modified versions thereof, water-  
4 soluble celluloses and modified versions thereof, water soluble polyacrylamides and copolymers  
5 thereof, and combinations thereof.

1 351. (Previously presented) The water-based drilling fluid of claim 344 wherein said  
2 water soluble polymer is selected from the group consisting of water soluble starches and  
3 modified versions thereof, water-soluble polysaccharides and modified versions thereof, water-  
4 soluble celluloses and modified versions thereof, water soluble polyacrylamides and copolymers  
5 thereof, and combinations thereof.

1 352. (Previously presented) The water based drilling fluid of claim 329 wherein said  
2 surfactant produces a reduced surface tension of said water based drilling fluid.

1 353. (Previously presented) The water based drilling fluid of claim 352 wherein said  
2 reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

1 354. (Previously presented) The water based drilling fluid of claim 341 wherein said  
2 surfactant produces a reduced surface tension of said water based drilling fluid.

1 355. (Previously presented) The water based drilling fluid of claim 354 wherein said  
2 reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

1 356. (Previously presented) The water based drilling fluid of claim 346 wherein said  
2 surfactant produces a reduced surface tension of said water based drilling fluid.

1 357. (Previously presented) The water based drilling fluid of claim 356 wherein said  
2 reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

1 358. (Currently amended) ~~The water-based drilling fluid of claim 351 wherein said~~  
2 ~~water soluble polymer comprises polymers~~ A water-based drilling fluid comprising:

3 an aqueous base;

4 about 7.5 lb./bbl. water soluble polymer selected from the group consisting of modified  
5 polysaccharides having a weight average molecular weight of about 500,000 to  
6 about 2,500,000; and,

7 about 2 lb./bbl. surfactant in association with said water soluble polymer, said surfactant  
8 being selected from the group consisting of alkyl sulfates and alkyl ether sulfates;  
9 wherein said water soluble polymer, said surfactant, and said association provide said  
10 water- based drilling fluid with effective rheology and fluid loss control properties  
11 comprising low shear viscosity wherein said low shear viscosity is about 70,000  
12 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at  
13 75 °F;  
14 wherein said fluid consists essentially of additives other than a solid bridging agent.

1 359. (Previously presented) The water-based drilling fluid of claim 351 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 modified polysaccharides having a weight average molecular weight of about from about  
4 700,000 to about 1,200,000.

1 360. (Previously presented) The water-based drilling fluid of claim 351 wherein said  
2 water-soluble polymer comprises xanthan polysaccharides.

1 361. (Currently amended) ~~The water-based drilling fluid of claim 351 wherein said~~  
2 ~~water soluble polymer comprises one or more polymers~~ A water-based drilling fluid comprising:  
3 an aqueous base;  
4 about 7.5 lb./bbl. water soluble polymer selected from the group consisting of  
5 synthetically modified starches having a weight average molecular weight of from  
6 about 200,000 to about 2,500,000; and,  
7 about 2 lb./bbl. surfactant in association with said water soluble polymer;

8 wherein said water soluble polymer, said surfactant, and said association provide said  
9 water- based drilling fluid with effective rheology and fluid loss control properties  
10 comprising low shear viscosity.

1 362. (Previously presented) The water-based drilling fluid of claim 351 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 synthetically modified starches having a weight average molecular weight of from about 600,000  
4 to about 1,000,000.

1 363. (Previously presented) The water-based drilling fluid of claim 361 wherein said  
2 synthetically modified starches comprise a functional group selected from the group consisting  
3 of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

1 364. (Previously presented) The water-based drilling fluid of claim 358 wherein said  
2 synthetically modified polysaccharides comprise a functional group selected from the group  
3 consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

1 365. (Previously presented) The water-based drilling fluid of claim 329 wherein said  
2 water soluble polymer comprises 50/50 wt.% modified xanthan polysaccharide and synthetically  
3 modified starch.

1 366. (Previously presented) The water-based drilling fluid of claim 331 wherein said  
2 water soluble polymer comprises 50/50 wt.% modified xanthan polysaccharide and synthetically  
3 modified starch.

1 367. (Previously presented) The water-based drilling fluid of claim 341 wherein said  
2 water soluble polymer comprises 50/50 wt.% modified xanthan polysaccharide and synthetically  
3 modified starch.

1 368. (Previously presented) The water-based drilling fluid of claim 344 wherein said  
2 water soluble polymer comprises 50/50 wt.% modified xanthan polysaccharide and synthetically  
3 modified starch.

1 369. (Previously presented) The water-based drilling fluid of claim 345 wherein said  
2 water soluble polymer comprises 50/50 wt.% modified xanthan polysaccharide and synthetically  
3 modified starch.

1 370. (Currently amended) A water-based drilling fluid comprising:  
2 about 7.5 lb./bbl. water soluble polymer;  
3 about 2 lb./bbl. ~~surfactant~~sodium tridecyl ether sulfate in association with said water  
4 soluble polymer; and  
5 a concentration of a non-toxic water emulsifiable material as an internal phase;  
6 wherein said water soluble polymer, said surfactant, and said association provide said  
7 water-based drilling fluid with effective rheology and fluid loss control properties  
8 comprising low shear viscosity.

1 371. (Canceled)

1 372. (Previously presented) The water-based drilling fluid of claim 370 wherein said  
2 water soluble polymer is selected from the group consisting of water soluble starches and  
3 modified versions thereof, water-soluble polysaccharides and modified versions thereof, water-  
4 soluble celluloses and modified versions thereof, water soluble polyacrylamides and copolymers  
5 thereof, and combinations thereof.

1 373. (Canceled)

1 374. (Currently amended) The water-based drilling fluid of claim ~~371~~370 wherein said  
2 water soluble polymer is a combination comprising from about 40 to about 60 wt.% xanthan

polysaccharide and from about 40 to about 60 wt.% synthetically modified starch comprising one or more functional groups selected from the group consisting of carboxymethyl, propylene glycol, and epichlorohydrin functional groups.

375. (Currently amended) The water-based drilling fluid of claim ~~374~~370 wherein said water soluble polymer is a combination comprising about 50 wt.% xanthan polysaccharide and about 50 wt.% synthetically modified starch comprising one or more functional groups selected from the group consisting of carboxymethyl, propylene glycol, and epichlorohydrin functional groups.

376. (Previously presented) A water-based drilling fluid comprising:

an aqueous base;

about 7.5 lb./bbl. of water soluble polymer comprising a combination of about 50 wt.%

xanthan polysaccharide and about 50 wt.% synthetically modified starch

comprising one or more functional groups selected from the group consisting of a

carboxymethyl group, a propylene glycol group, and an epichlorohydrin

functional group;

about 2 lb./bbl. sodium tridecyl ether sulfate;

wherein said water soluble polymer, said surfactant, and said association provide said

water-based drilling fluid with effective rheology and fluid loss control properties

comprising low shear rate viscosity; and

wherein said water-based fluid consists essentially of additives other than solid bridging agents.

377. (Previously presented) The water based drilling fluid of claim 376 further

comprising a concentration of a non-toxic water emulsifiable material as an internal phase.



1           378. (Previously presented) The water-based drilling fluid of claim 377 wherein said  
2 non-toxic water emulsifiable material is a water insoluble material selected from the group  
3 consisting of olefins, paraffins, water insoluble glycols, water insoluble esters, water insoluble  
4 Fischer-Tropsch reaction products, and combinations thereof.

1           379. (Previously presented) The water-based drilling fluid of claim 376 further  
2 comprising an alkali metal salt of a compound selected from the group consisting of a thiosulfate  
3 and a thiosulfonate.

1           380. (Previously presented) The water-based drilling fluid of claim 377 further  
2 comprising an alkali metal salt of a compound selected from the group consisting of a thiosulfate  
3 and a thiosulfonate.

1           381. (Previously presented) The water-based drilling fluid of claim 376 wherein said  
2 water soluble polymer comprises 50/50 wt.% modified xanthan polysaccharide and synthetically  
3 modified starch.

1           382. (Previously presented) The water-based drilling fluid of claim 377 wherein said  
2 water soluble polymer comprises 50/50 wt.% modified xanthan polysaccharide and synthetically  
3 modified starch.

1           383. (Previously presented) The water-based drilling fluid of claim 379 wherein said  
2 water soluble polymer comprises 50/50 wt.% modified xanthan polysaccharide and synthetically  
3 modified starch.

1           384. (Previously presented) The water-based drilling fluid of claim 380 wherein said  
2 water soluble polymer comprises 50/50 wt.% modified xanthan polysaccharide and synthetically  
3 modified starch.

1           385. (Previously presented) The water-based drilling fluid of claim 376 wherein said  
2 low shear rate viscosity is about 70,000 cP or more upon exposure to 0.3 rpm, measured with a  
3 Brookfield viscometer at 75 °F.

1           386. (Previously presented) The water-based drilling fluid of claim 377 wherein said  
2 low shear rate viscosity is about 100,000 cP or more upon exposure to 0.3 rpm, measured with a  
3 Brookfield viscometer at 75 °F.

1           387. (Previously presented) The water-based drilling fluid of claim 378 wherein said  
2 low shear rate viscosity is about 70,000 cP or more upon exposure to 0.3 rpm, measured with a  
3 Brookfield viscometer at 75 °F.

1           388. (Previously presented) The water-based drilling fluid of claim 379 wherein said  
2 low shear rate viscosity is about 70,000 cP or more upon exposure to 0.3 rpm, measured with a  
3 Brookfield viscometer at 75 °F.

1           389. (Previously presented) The water-based drilling fluid of claim 380 wherein said  
2 low shear rate viscosity is about 70,000 cP or more upon exposure to 0.3 rpm, measured with a  
3 Brookfield viscometer at 75 °F.

1           390. (Previously presented) The water-based drilling fluid of claim 377 wherein said  
2 concentration is from about 2 to about 20 vol.%.

1           391. (Previously presented) The water-based drilling fluid of claim 390 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml/30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           Claims 392-414. (Canceled).

1           413. (currently amended) A water-based drilling fluid comprising:

2 an aqueous base comprising a concentration of about 20 vol.% or less non-toxic water

3 emulsifiable material as an internal phase;

4 a quantity of water soluble polymer comprising polymers selected from the group

5 consisting of synthetically modified starches having a weight average molecular

6 weight of from about 200,000 to about 2,500,000; and,

7 an amount of surfactant in association with said water soluble polymer, said surfactant

8 being selected from the group consisting of alkyl sulfates, alkyl ether sulfates,

9 alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers,

10 and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal

11 salts thereof, and combinations thereof;

12 wherein said quantity, said amount, and said association provide said water based drilling

13 fluid with effective rheology and fluid loss control properties comprising a low

14 shear rate viscosity of about 70,000 cP or more upon exposure to 0.3 rpm,

15 measured with a Brookfield viscometer at 75 °F.

1 414. (Canceled).

1 415. (previously presented) The water-based drilling fluid of claim 413 wherein said  
2 effective rheology and fluid loss control properties comprise a low shear rate viscosity of about  
3 100,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

1 416. (Canceled)

1 417. (previously presented) The water-based drilling fluid of claim 413 wherein said  
2 surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

1 418. (previously presented) The water-based drilling fluid of claim 413 wherein said  
2 surfactant comprises an alkyl ether sulfate.

1 419. (Canceled)

1 420. (Previously presented) The water-based drilling fluid of claim 415 wherein said  
2 surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

1 421. (Previously presented) The water-based drilling fluid of claim 415 wherein said  
2 surfactant comprises an alkyl ether sulfate.

1 422. (Previously presented) The water-based drilling fluid of claim 415 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1 423. (Previously presented) The water-based drilling fluid of claim 420 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1 424. (Previously presented) The water-based drilling fluid of claim 421 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1 425. (Previously presented) The water-based drilling fluid of claim 413 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1 426. (Previously presented) The water-based drilling fluid of claim 420 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1 427. (Previously presented) The water-based drilling fluid of claim 424 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1 428. (Previously presented) The water-based drilling fluid of claim 424 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 1 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           429. (Previously presented) The water based drilling fluid of claim 413 wherein said  
2 surfactant produces a reduced surface tension of said water based drilling fluid.

1           430. (Previously presented) The water based drilling fluid of claim 429 wherein said  
2 reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

1           431. (Previously presented) The water-based drilling fluid of claim 424 wherein said  
2 concentration is from about 2 to about 20 vol.%.

1           432. (Previously presented) The water-based drilling fluid of claim 413 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 modified polysaccharides having a weight average molecular weight of about 500,000 to about  
4 2,500,000.

1           433. (Previously presented) The water-based drilling fluid of claim 413 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 modified polysaccharides having a weight average molecular weight of about from about  
4 700,000 to about 1,200,000.

1           434. (Previously presented) The water-based drilling fluid of claim 413 wherein said  
2 water-soluble polymer comprises xanthan polysaccharides.

1           435. (Previously presented) The water-based drilling fluid of claim 433 wherein said  
2 water-soluble polymer comprises xanthan polysaccharides.

1           436. (Canceled) .

1           437. (Previously presented) The water-based drilling fluid of claim 413 wherein said  
2 water soluble polymer comprises polymers selected from the group consisting of synthetically  
3 modified starches having a weight average molecular weight of from about 600,000 to about  
4 1,000,000.

1 438. (Previously presented) The water-based drilling fluid of claim 432 wherein said  
2 synthetically modified polysaccharides comprise a functional group selected from the group  
3 consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

1 439. (Previously presented) The water-based drilling fluid of claim 413 wherein said  
2 synthetically modified starches comprise a functional group selected from the group consisting  
3 of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

1 440. (Currently amended) ~~The water-based drilling fluid of claim 413~~ A water-based  
2 drilling fluid comprising:

3 an aqueous base comprising a concentration of about 20 vol.% or less non-toxic water

4 emulsifiable material as an internal phase;

5 a quantity of water soluble polymer comprising polymers selected from the group

6 consisting of synthetically modified starches having a weight average molecular

7 weight of from about 200,000 to about 2,500,000; and,

8 an amount of surfactant in association with said water soluble polymer;

9 wherein said quantity, said amount, and said association provide said water based drilling

10 fluid having a density of about 7.9 lb/gal. or more with effective rheology and

11 fluid loss control properties comprising a low shear rate viscosity of about 70,000

12 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at

13 75 °F.

1 441. (Currently amended) A water-based drilling fluid comprising:

2 an aqueous base;

3 a quantity of water soluble polymer comprising one or more polymers selected from the  
4 group consisting of synthetically modified starches having a weight average  
5 molecular weight of from about 200,000 to about 2,500,000;

6 an amount of surfactant in association with said water soluble polymer, said surfactant  
7 being selected from the group consisting of alkyl sulfates, alkyl ether sulfates,  
8 alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers,  
9 and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal  
10 salts thereof, and combinations thereof;

11 wherein said quantity, said amount, and said association provide said water- based  
12 drilling fluid with effective rheology and fluid loss control properties; and  
13 a concentration of about 20 vol.% or less non-toxic water emulsifiable material as an  
14 internal phase, said surfactant being effective to emulsify said water emulsifiable  
15 material and to produce emulsion droplets having an average diameter of about 30  
16 microns or less.

1 442. (Canceled)

1 443. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

1 444. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 surfactant comprises an alkyl ether sulfate.

1 445. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 surfactant is sodium tridecyl ether sulfate.

1           446. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 surfactant is effective to emulsify said water emulsifiable material and to produce emulsion  
3 droplets having an average diameter of about 20 microns or less.

1           447. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 surfactant is effective to emulsify said water emulsifiable material and to produce emulsion  
3 droplets having an average diameter of about 15 microns or less.

1           448. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 surfactant is effective to emulsify said water emulsifiable material and to produce emulsion  
3 droplets having an average diameter of about 5 microns or less.

1           449. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 effective rheology and fluid loss control properties comprise a low shear rate viscosity of about  
3 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

1           450. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 concentration is from about 2 to about 20 vol.%.

1           451. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 concentration is about 5 vol.%.

1           452. (Previously presented) The water-based drilling fluid of claim 446 wherein said  
2 concentration is about 5 vol.%.

1           453. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 non-toxic water emulsifiable material is a water insoluble material selected from the group  
3 consisting of olefins, paraffins, water insoluble glycols, water insoluble esters, water insoluble  
4 Fischer-Tropsch reaction products, and combinations thereof.



1           454. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 water emulsifiable material is a water insoluble material selected from the group consisting of  
3 olefins, paraffins, water insoluble glycols, and combinations thereof.

1           455. (Previously presented) The water-based drilling fluid of claim 446 wherein said  
2 water emulsifiable material is a water insoluble material selected from the group consisting of  
3 olefins, paraffins, water insoluble glycols, and combinations thereof.

1           456. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 fluid consists essentially of additives other a solid bridging agent.

1           457. (Previously presented) The water-based drilling fluid of claim 446 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           458. (Previously presented) The water-based drilling fluid of claim 452 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           459. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           460. (Previously presented) The water-based drilling fluid of claim 448 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           461. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 1 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           462. (Previously presented) The water-based drilling fluid of claim 448 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 1 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           463.-464. (Canceled).

1           465. (Previously presented) The water based drilling fluid of claim 441 wherein said  
2 surfactant produces a reduced surface tension of said water based drilling fluid.

1           466. (Previously presented) The water based drilling fluid of claim 465 wherein said  
2 reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

1           467. (Previously presented) The water based drilling fluid of claim 446 wherein said  
2 surfactant produces a reduced surface tension of said water based drilling fluid.

1           468. (Previously presented) The water based drilling fluid of claim 467 wherein said  
2 reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

1           469. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 modified polysaccharides having a weight average molecular weight of about 500,000 to about  
4 2,500,000.

1           470. (Previously presented) The water-based drilling fluid of any of claims 441  
2 wherein said water soluble polymer comprises one or more polymers selected from the group  
3 consisting of modified polysaccharides having a weight average molecular weight of about from  
4 about 700,000 to about 1,200,000.

1           471. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 water-soluble polymer comprises xanthan polysaccharides.

1           472. (Canceled).

1           473. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 modified polysaccharides having a weight average molecular weight of about 600,000 to about  
4 1,000,000.

1           474. (Previously presented) The water-based drilling fluid of claim 441 wherein said  
2 synthetically modified starches comprise a functional group selected from the group consisting  
3 of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

1           475. (Previously presented) The water-based drilling fluid of claim 469 wherein said  
2 synthetically modified polysaccharides comprise a functional group selected from the group  
3 consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

1           476. (Currently amended) A water-based drilling fluid comprising:  
2 an aqueous base comprising a concentration of about 20 vol.% or less non-toxic water  
3 emulsifiable material as an internal phase;  
4 about 2 lb./bbl. or more water soluble polymer comprising one or more polymers selected  
5 from the group consisting of synthetically modified starches having a weight  
6 average molecular weight of from about 200,000 to about 2,500,000; and,  
7 about 0.2 lb./bbl. or more surfactant in association with said water soluble polymer, said  
8 surfactant being selected from the group consisting of alkyl sulfates, alkyl ether  
9 sulfates, alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol  
10 ethers, and phosphated esters comprising about 8 to about 18 carbon atoms, alkali  
11 metal salts thereof, and combinations thereof;

wherein said water soluble polymer, said surfactant, and said association provide said water-based drilling fluid with effective rheology and fluid loss control properties.

477. (Canceled)

478. (Previously presented) The water-based drilling fluid of claim 476 wherein said surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

479. (Previously presented) The water-based drilling fluid of claim 476 wherein said surfactant comprises an alkyl ether sulfate.

480. (Previously presented) The water-based drilling fluid of claim 476 wherein said surfactant is sodium tridecyl ether sulfate.

481. (Previously presented) The water-based drilling fluid of claim 476 wherein said effective rheology and fluid loss control properties comprise a low shear rate viscosity of about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

482. (Previously presented) The water-based drilling fluid of claim 476 wherein said concentration is from about 2 to about 20 vol. %.

483. (Previously presented) The water-based drilling fluid of claim 479 wherein said concentration is from about 2 to about 20 vol. %.

484. (Previously presented) The water-based drilling fluid of claim 476 wherein said fluid consists essentially of additives other than a solid bridging agent.

485. (Previously presented) The water-based drilling fluid of claim 479 wherein said fluid consists essentially of additives other than a solid bridging agent.

486. (Previously presented) The water-based drilling fluid of claim 480 wherein said fluid consists essentially of additives other than a solid bridging agent.

1 487. (Previously presented) The water-based drilling fluid of claim 476 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1 488. (Previously presented) The water-based drilling fluid of claim 486 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1 489.-491. (Canceled).

1 492. (Previously presented) The water based drilling fluid of claim 476 wherein said  
2 surfactant produces a reduced surface tension of said water based drilling fluid.

1 493. (Previously presented) The water based drilling fluid of claim 492 wherein said  
2 reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

1 494. (Previously presented) The water based drilling fluid of claim 486 wherein said  
2 surfactant produces a reduced surface tension of said water based drilling fluid.

1 495. (Previously presented) The water based drilling fluid of claim 494 wherein said  
2 reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

1 496. (Previously presented) The water based drilling fluid of claim 491 wherein said  
2 surfactant produces a reduced surface tension of said water based drilling fluid.

1 497. (Previously presented) The water based drilling fluid of claim 496 wherein said  
2 reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

1 498. (Previously presented) The water-based drilling fluid of claim 476 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 modified polysaccharides having a weight average molecular weight of about 500,000 to about  
4 2,500,000.

1           499. (Previously presented) The water-based drilling fluid of claim 476 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 modified polysaccharides having a weight average molecular weight of from about 700,000 to  
4 about 1,200,000.

1           500. (Previously presented) The water-based drilling fluid of claim 476 wherein said  
2 water-soluble polymer comprises xanthan polysaccharides.

1           501. (Previously presented) The water-based drilling fluid of claim 486 wherein said  
2 water-soluble polymer comprises xanthan polysaccharides.

1           502. (Canceled).

1           503. (Previously presented) The water-based drilling fluid of claim 476 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 synthetically modified starches having a weight average molecular weight of from about 600,000  
4 to about 1,000,000.

1           504. (Previously presented) The water-based drilling fluid of claim 476 wherein said  
2 synthetically modified starches comprise a functional group selected from the group consisting  
3 of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

1           505. (Previously presented) The water-based drilling fluid of claim 498 wherein said  
2 synthetically modified polysaccharides comprise a functional group selected from the group  
3 consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

1           506. (Previously presented) The water-based drilling fluid of claim 476 wherein said  
2 water soluble polymer comprises about 50/50 wt.% modified xanthan polysaccharide and  
3 synthetically modified starch.

1 507. (Previously presented) The water-based drilling fluid of claim 486 wherein said  
2 water soluble polymer comprises about 50/50 wt.% modified xanthan polysaccharide and  
3 synthetically modified starch.

1 508.-522. (Canceled).

1 523. (Currently amended) A water-based drilling fluid comprising:  
2 an aqueous base comprising about 20 vol.% or less non-toxic water emulsifiable  
3 material;  
4 a quantity of water soluble polymer comprising one or more polymers selected from the  
5 group consisting of synthetically modified starches having a weight average  
6 molecular weight of from about 200,000 to about 2,500,000; and,  
7 an amount of from about 0.2 lb/bbl to about 4 lb/bbl surfactant in association with said  
8 water soluble polymer, said surfactant being selected from the group consisting of  
9 alkyl sulfates, alkyl ether sulfates, alkyl sulfonates, ethoxylated esters,  
10 ethoxylated glycoside esters, alcohol ethers, and phosphated esters comprising  
11 about 8 to about 18 carbon atoms, alkali metal salts thereof, and combinations  
12 thereof;  
13 wherein said quantity, said amount, and said association provide said water-based drilling  
14 fluid with effective rheology and fluid loss control properties.

1 524. (Previously presented) The water-based drilling fluid of claim 523 wherein said  
2 effective rheology and fluid loss control properties comprise a low shear rate viscosity of about  
3 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

1 525. (Canceled)

1        526. (Previously presented) The water-based drilling fluid of claim 523 wherein said  
2 surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

1        527. (Previously presented) The water-based drilling fluid of claim 523 wherein said  
2 surfactant comprises an alkyl ether sulfate.

1        528. (Previously presented) The water-based drilling fluid of claim 524 wherein said  
2 surfactant is selected from the group consisting of alkyl sulfates, alkyl ether sulfates, alkyl  
3 sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers, and phosphated esters  
4 comprising about 8 to about 18 carbon atoms, alkali metal salts thereof, and combinations  
5 thereof.

1        529. (Previously presented) The water-based drilling fluid of claim 524 wherein said  
2 surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

1        530. (Previously presented) The water-based drilling fluid of claim 524 wherein said  
2 surfactant comprises an alkyl ether sulfate.

1        531. (Previously presented) The water-based drilling fluid of claim 523 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1        532. (Previously presented) The water-based drilling fluid of claim 525 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1        533. (Previously presented) The water-based drilling fluid of claim 528 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1        534. (Previously presented) The water-based drilling fluid of claim 531 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml/30 min. or less using  
3 the standard dynamic filtration fluid loss test.



1           535. (Previously presented) The water-based drilling fluid of claim 532 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           536. (Previously presented) The water-based drilling fluid of claim 533 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           537. (Previously presented) The water-based drilling fluid of claim 533 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 1 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           538. (Previously presented) The water based drilling fluid of claim 531 wherein said  
2 surfactant produces a reduced surface tension of said water based drilling fluid.

1           539. (Previously presented) The water based drilling fluid of claim 538 wherein said  
2 reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

1           540. (Previously presented) The water-based drilling fluid of claim 523 wherein said  
2 concentration is from about 2 to about 20 vol. %.

1           541. (Previously presented) The water-based drilling fluid of claim 523 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 modified polysaccharides having a weight average molecular weight of about 500,000 to about  
4 2,500,000.

1           542. (Previously presented) The water-based drilling fluid of claim 523 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 modified polysaccharides having a weight average molecular weight of about from about  
4 700,000 to about 1,200,000.

1 543. (Previously presented) The water-based drilling fluid of claim 523 wherein said  
2 water-soluble polymer comprises xanthan polysaccharides.

1 544. (Previously presented) The water-based drilling fluid of claim 533 wherein said  
2 water-soluble polymer comprises xanthan polysaccharides.

1 545. (Canceled).

1 546. (Previously presented) The water-based drilling fluid of claim 523 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 synthetically modified starches having a weight average molecular weight of from about 600,000  
4 to about 1,000,000.

1 547. (Previously presented) The water-based drilling fluid of claim 541 wherein said  
2 synthetically modified polysaccharides comprise a functional group selected from the group  
3 consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

1 548. (Previously presented) The water-based drilling fluid of claim 523 wherein said  
2 synthetically modified starches comprise a functional group selected from the group consisting  
3 of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

1 549. (Previously presented) The water-based drilling fluid of claim 531 having a  
2 density of about 7.9 lb/gal. or more.

1 550-575. (Canceled).

1 576. (currently amended) A water-based drilling fluid comprising:

2 an aqueous base;

3 a concentration of non-toxic water emulsifiable material as an internal phase, said

4 quantity being sufficient to provide effective lubrication properties to said drilling

5 fluid;

6 a quantity of water soluble polymer selected from the group consisting of synthetically  
7 modified starches having a weight average molecular weight of from about  
8 200,000 to about 2,500,000; and,  
9 an amount of surfactant in association with said water soluble polymer, said surfactant  
10 being selected from the group consisting of alkyl sulfates, alkyl ether sulfates,  
11 alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers,  
12 and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal  
13 salts thereof, and combinations thereof;  
14 wherein said quantity, said amount, and said association provide said water based drilling  
15 fluid with effective rheology and fluid loss control properties.

1 577. (Previously presented) The water-based drilling fluid of claim 576 wherein said  
2 effective rheology and fluid loss control properties comprise a low shear rate viscosity of about  
3 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

1 578. (Canceled)

1 579. (Previously presented) The water-based drilling fluid of claim 576 wherein said  
2 surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

1 580. (Previously presented) The water-based drilling fluid of claim 576 wherein said  
2 surfactant comprises an alkyl ether sulfate.

1 581. (Previously presented) The water-based drilling fluid of claim 576 further  
2 comprising a concentration of non-toxic water emulsifiable material as an internal phase, said  
3 quantity being sufficient to provide effective lubrication properties to said drilling fluid.

1           582. (Previously presented) The water-based drilling fluid of claim 577 further  
2 comprising a concentration of non-toxic water emulsifiable material as an internal phase, said  
3 quantity being sufficient to provide effective lubrication properties to said drilling fluid.

1           583. (Canceled)

1           584. (Previously presented) The water-based drilling fluid of claim 579 further  
2 comprising a concentration of non-toxic water emulsifiable material as an internal phase, said  
3 quantity being sufficient to provide effective lubrication properties to said drilling fluid.

1           585. (Previously presented) The water-based drilling fluid of claim 580 further  
2 comprising a concentration of non-toxic water emulsifiable material as an internal phase, said  
3 quantity being sufficient to provide effective lubrication properties to said drilling fluid.

1           586. (Previously presented) The water-based drilling fluid of claim 576 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           587. (Previously presented) The water-based drilling fluid of claim 581 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           588. (Previously presented) The water-based drilling fluid of claim 582 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           589. (Previously presented) The water-based drilling fluid of claim 583 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           590. (Previously presented) The water-based drilling fluid of claim 584 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           591. (Previously presented) The water-based drilling fluid of claim 585 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1 592. (Previously presented) The water-based drilling fluid of claim 576 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1 593. (Previously presented) The water-based drilling fluid of claim 581 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1 594. (Previously presented) The water-based drilling fluid of claim 586 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1 595. (Previously presented) The water-based drilling fluid of claim 586 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 1 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1 596. (Canceled).

1 597. (Previously presented) The water-based drilling fluid of claim 581 wherein said  
2 concentration is from about 2 to about 20 vol.%.

1 598. (Previously presented) The water-based drilling fluid of claim 587 wherein said  
2 concentration is from about 2 to about 20 vol.%.

1 599. (Previously presented) The water-based drilling fluid of claim 593 wherein said  
2 concentration is from about 2 to about 20 vol.%.

1 600. (Previously presented) The water-based drilling fluid of claim 576 wherein said  
2 synthetically modified starches comprise a functional group selected from the group consisting  
3 of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

1           601. (Previously presented) The water-based drilling fluid of claim 587 wherein said  
2 synthetically modified starches comprise a functional group selected from the group consisting  
3 of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

1           602. (Previously presented) The water-based drilling fluid of claim 587 having a  
2 density of about 7.9 lb/gal. or more.

1           603. (Currently amended) A water-based drilling fluid comprising:  
2 an aqueous base comprising a concentration of non-toxic water emulsifiable material as  
3 an internal phase;  
4 a blend of water soluble polymers comprising from about 10 wt.% to about 90 wt.%  
5 modified polysaccharide and from about 10 wt.% to about 90 wt.% synthetically  
6 modified starch; and,  
7 an amount of surfactant in association with said water soluble polymer, said surfactant  
8 being selected from the group consisting of alkyl sulfates, alkyl ether sulfates,  
9 alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers,  
10 and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal  
11 salts thereof, and combinations thereof;

12 wherein said quantity, said amount, and said association provide said water based drilling  
13 fluid with effective rheology and fluid loss control properties comprising a low  
14 shear rate viscosity of about 70,000 cP or more upon exposure to 0.3 rpm,  
15 measured with a Brookfield viscometer at 75 °F.

1           604. (Previously presented) The water-based drilling fluid of claim 603 wherein said  
2 effective rheology and fluid loss control properties comprise a low shear rate viscosity of about  
3 100,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

1           605. (Previously presented) The water-based drilling fluid of claim 603 wherein said  
2 surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

1           606. (Previously presented) The water-based drilling fluid of claim 603 wherein said  
2 surfactant comprises an alkyl ether sulfate.

1           607. (Previously presented) The water-based drilling fluid of claim 603 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           608. (Previously presented) The water-based drilling fluid of claim 603 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           609. (Previously presented) The water-based drilling fluid of claim 603 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 1 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           610. (Previously presented) The water-based drilling fluid of claim 603 wherein said  
2 water modified polysaccharides have a weight average molecular weight of about 500,000 to  
3 about 2,500,000.

1           611. (Previously presented) The water-based drilling fluid of claim 603 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 modified polysaccharides having a weight average molecular weight of about from about  
4 700,000 to about 1,200,000.

1           612. (Previously presented) The water-based drilling fluid of claim 603 having a  
2 density of about 7.9 lb/gal. or more.

1           613. (Currently amended) A water-based drilling fluid comprising:

2 an aqueous base comprising a concentration of about 20 vol.% or less non-toxic water  
3 emulsifiable material as an internal phase;  
4 a blend of water soluble polymers comprising from about 10 wt.% to about 90 wt.%  
5 modified polysaccharide and from about 10 wt.% to about 90 wt.% synthetically  
6 modified starch; and,  
7 an amount of surfactant in association with said water soluble polymer, said surfactant  
8 being selected from the group consisting of alkyl sulfates, alkyl ether sulfates,  
9 alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers,  
10 and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal  
11 salts thereof, and combinations thereof;

12 wherein said quantity, said amount, and said association provide said water based drilling  
13 fluid with effective rheology and fluid loss control properties comprising a low  
14 shear rate viscosity of about 70,000 cP or more upon exposure to 0.3 rpm,  
15 measured with a Brookfield viscometer at 75 °F.

1 614. (Previously presented) The water-based drilling fluid of claim 613 wherein said  
2 surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

1 615. (Previously presented) The water-based drilling fluid of claim 613 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1 616. (Previously presented) The water-based drilling fluid of claim 613 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.



1           617. (Previously presented) The water-based drilling fluid of claim 613 wherein said  
2 surfactant is effective to emulsify said water emulsifiable material and to produce emulsion  
3 droplets having an average diameter of about 30 microns or less.

1           618. (Previously presented) ) The water-based drilling fluid of claim 613 wherein said  
2 surfactant is effective to emulsify said water emulsifiable material and to produce emulsion  
3 droplets having an average diameter of about 20 microns or less.

1           619. (Previously presented) The water-based drilling fluid of claim 613 having a  
2 density of about 7.9 lb/gal. or more.

1           620. (Previously presented) A water-based drilling fluid comprising:  
2 an aqueous base comprising a concentration of about 20 vol.% or less non-toxic water  
3 emulsifiable material as an internal phase;  
4 a blend of water soluble polymers comprising synthetically modified starch and from  
5 about 40 wt.% to about 60 wt.% modified polysaccharide; and,  
6 an amount of surfactant in association with said water soluble polymer;  
7 wherein said quantity, said amount, and said association provide said water based drilling  
8 fluid with effective rheology and fluid loss control properties comprising a low  
9 shear rate viscosity of about 70,000 cP or more upon exposure to 0.3 rpm,  
10 measured with a Brookfield viscometer at 75 °F.

1           621. (Previously presented) The water-based drilling fluid of claim 620 wherein said  
2 surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

1           622. (Previously presented) The water-based drilling fluid of claim 620 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           623. (Previously presented) The water-based drilling fluid of claim 620 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           624. (Previously presented) The water-based drilling fluid of claim 620 wherein said  
2 concentration is from about 2 to about 20 vol.%.

1           625. (Previously presented) The water-based drilling fluid of claim 620 wherein said  
2 surfactant is effective to emulsify said water emulsifiable material and to produce emulsion  
3 droplets having an average diameter of about 30 microns or less.

1           626. (Previously presented) ) The water-based drilling fluid of claim 620 wherein said  
2 surfactant is effective to emulsify said water emulsifiable material and to produce emulsion  
3 droplets having an average diameter of about 20 microns or less.

1           627. (Previously presented) The water-based drilling fluid of claim 620 having a  
2 density of about 7.9 lb/gal. or more.

1           628. (Previously presented) A water-based drilling fluid comprising:  
2 an aqueous base comprising a concentration of about 20 vol.% or less non-toxic water  
3 emulsifiable material as an internal phase;  
4 about 2 lb./bbl. or more water soluble polymer comprising about 50/50 wt.% modified  
5 xanthan polysaccharide and synthetically modified starch; and,  
6 about 0.2 lb./bbl. or more surfactant in association with said water soluble polymer;  
7 wherein said water soluble polymer, said surfactant, and said association provide said  
8 water- based drilling fluid with effective rheology and fluid loss control  
9 properties.

1           629. (Previously presented) The water-based drilling fluid of claim 628 wherein said  
2 surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

1           630. (Previously presented) The water-based drilling fluid of claim 628 wherein said  
2 effective rheology and fluid loss control properties comprise a low shear rate viscosity of about  
3 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

1           631. (Previously presented) The water-based drilling fluid of claim 628 wherein said  
2 concentration is from about 2 to about 20 vol.%.

1           632. (Previously presented) The water-based drilling fluid of claim 628 wherein said  
2 fluid consists essentially of additives other a solid bridging agent.

1           633. (Previously presented) The water-based drilling fluid of claim 628 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           634. (Previously presented)           The water-based drilling fluid of claim 628 wherein  
2 the quantity of water-soluble polymer is from about 2 lb/bbl to about 7.5 lb/bbl.

1           635. (Previously presented) A water-based drilling fluid comprising:

2 an aqueous base;

3 a quantity of water soluble polymer;

4 an amount of sodium tridecyl ether sulfate in association with said water soluble  
5 polymer;

6 wherein said quantity, said amount, and said association provide said water- based

7 drilling fluid with effective rheology and fluid loss control properties; and

8 a concentration of about 20 vol.% or less non-toxic water emulsifiable material as an

9 internal phase, said surfactant being effective to emulsify said water emulsifiable

material and to produce emulsion droplets having an average diameter of about 30 microns or less.

636. (Previously presented) The water-based drilling fluid of claim 635 wherein said water soluble polymer is selected from the group consisting of:

one or more polymers selected from the group consisting of synthetically modified starches having a weight average molecular weight of from about 200,000 to about 2,500,000; and  
one or more polymers selected from the group consisting of modified polysaccharides having a weight average molecular weight of about 500,000 to about 2,500,000.

637. (Previously presented) The water-based drilling fluid of claim 635 wherein said water soluble polymer comprises one or more polymers selected from the group consisting of synthetically modified starches having a weight average molecular weight of from about 600,000 to about 1,000,000;  
said water soluble polymer comprises one or more polymers selected from the group consisting of modified polysaccharides having a weight average molecular weight of from about 700,000 to about 1,200,000.

638. (Previously presented) The water-based drilling fluid of claim 635 wherein said synthetically modified polysaccharides comprise a functional group selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

639. (Previously presented) The water-based drilling fluid of claim 635 wherein said surfactant is effective to emulsify said water emulsifiable material and to produce emulsion droplets having an average diameter of about 20 microns or less.

1           640. (Previously presented)       The water-based drilling fluid of claim 635 wherein  
2 the quantity of water-soluble polymer is from about 2 lb/bbl to about 7.5 lb/bbl.

1           641. (Previously presented) A water-based drilling fluid comprising:  
2 an aqueous base comprising a concentration of about 20 vol.% or less non-toxic water  
3 emulsifiable material as an internal phase;  
4 a quantity of from about 2 lb/bbl to about 7.5 lb/bbl. water soluble polymer comprising  
5 polymers selected from the group consisting of synthetically modified  
6 polysaccharides comprise a functional group selected from the group consisting of  
7 a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group;  
8 and,

9 an amount of surfactant in association with said water soluble polymer;

10 wherein said quantity, said amount, and said association provide said water based drilling  
11 fluid with effective rheology and fluid loss control properties comprising a low  
12 shear rate viscosity of about 70,000 cP or more upon exposure to 0.3 rpm,  
13 measured with a Brookfield viscometer at 75 °F.

1           642. (Previously presented) The water-based drilling fluid of claim 641 wherein said  
2 effective rheology and fluid loss control properties comprise a low shear rate viscosity of about  
3 100,000 cP or more upon exposure to 0.3 rpm , measured with a Brookfield viscometer at 75 °F.

1           643. (Previously presented) The water-based drilling fluid of claim 641 wherein said  
2 surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

1           644. (Previously presented) The water-based drilling fluid of claim 641 wherein said  
2 surfactant is sodium tridecyl ether sulfate.

1           645. (Previously presented) The water-based drilling fluid of claim 641 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           646. (Previously presented) The water-based drilling fluid of claim 641 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           647. (Previously presented) The water-based drilling fluid of claim 641 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 1 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           648. (Previously presented) The water-based drilling fluid of claim 641 wherein said  
2 concentration is from about 2 to about 20 vol.%.

1           649. (Previously presented) The water-based drilling fluid of claim 641 wherein said  
2 concentration is about 5 vol.%.

1           650. (Previously presented) The water-based drilling fluid of claim 641 wherein said  
2 water modified polysaccharides have a weight average molecular weight of about 500,000 to  
3 about 2,500,000.

1           651. (Previously presented) The water-based drilling fluid of claim 641 wherein said  
2 water-soluble polymer comprises xanthan polysaccharides.

1           652. (Previously presented) The water-based drilling fluid of claim 641 wherein said  
2 surfactant is effective to emulsify said water emulsifiable material and to produce emulsion  
3 droplets having an average diameter of about 30 microns or less.

1           653. (Previously presented) ) The water-based drilling fluid of claim 641 wherein said  
2 surfactant is effective to emulsify said water emulsifiable material and to produce emulsion  
3 droplets having an average diameter of about 20 microns or less.

1           654. (Previously presented) The water-based drilling fluid of claim 641 having a  
2 density of about 7.9 lb/gal. or more.

1           655. (Previously presented) A water-based drilling fluid comprising:  
2 an aqueous base comprising a concentration of about 20 vol.% or less non-toxic water  
3 emulsifiable material as an internal phase;  
4 from about 2 lb/bbl. to about 7.5 lb/bbl water soluble polymer comprising one or more  
5 synthetically modified polysaccharides comprising a functional group selected  
6 from the group consisting of a carboxymethyl group, a propylene glycol group,  
7 and an epichlorohydrin group; and,  
8 about 0.2 lb/bbl. or more surfactant in association with said water soluble polymer;  
9 wherein said water soluble polymer, said surfactant, and said association provide said  
10 water- based drilling fluid with effective rheology and fluid loss control  
11 properties.

1           656. (Previously presented) The water-based drilling fluid of claim 655 comprising  
2 from about 0.2 lb/bbl to about 4 lb/bbl surfactant in association with said water soluble polymer.

1           657. (Previously presented) The water-based drilling fluid of claim 655 wherein said  
2 effective rheology and fluid loss control properties comprise a low shear rate viscosity of about  
3 70,000 cP or more upon exposure to 0.3 rpm , measured with a Brookfield viscometer at 75 °F.

1           658. (Previously presented) The water-based drilling fluid of claim 655 wherein said  
2 surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

1           659. (Previously presented) The water-based drilling fluid of claim 655 wherein said  
2 surfactant comprises an alkyl ether sulfate.

1           660. (Previously presented) The water-based drilling fluid of claim 655 wherein said  
2 surfactant is sodium tridecyl ether sulfate.

1           661. (Previously presented) The water-based drilling fluid of claim 655 wherein said  
2 fluid consists essentially of additives other than a solid bridging agent.

1           662. (Previously presented) The water-based drilling fluid of claim 655 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 5 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           663. (Previously presented) The water-based drilling fluid of claim 655 wherein said  
2 effective fluid loss control properties comprise a fluid loss of about 1 ml./30 min. or less using  
3 the standard dynamic filtration fluid loss test.

1           664. (Previously presented) The water-based drilling fluid of claim 655 wherein said  
2 concentration is from about 2 to about 20 vol.%.

1           665. (Previously presented) The water-based drilling fluid of claim 655 wherein said  
2 concentration is about 5 vol.%.

1           666. (Previously presented) The water-based drilling fluid of claim 655 wherein said  
2 water modified polysaccharides have a weight average molecular weight of about 500,000 to  
3 about 2,500,000.

1           667. (Currently amended) The water-based drilling fluid of claim ~~690~~655 wherein said  
2 water soluble polymer comprises one or more polymers selected from the group consisting of  
3 modified polysaccharides having a weight average molecular weight of about from about  
4 700,000 to about 1,200,000.

1           668. (Currently amended) The water-based drilling fluid of claim ~~690~~655 wherein said  
2 water-soluble polymer comprises xanthan polysaccharides.



1           669. (Currently amended) The water-based drilling fluid of claim ~~690~~655 wherein said  
2   surfactant is effective to emulsify said water emulsifiable material and to produce emulsion  
3   droplets having an average diameter of about 30 microns or less.

1           670. (Currently amended) The water-based drilling fluid of claim ~~690~~655 wherein said  
2   surfactant is effective to emulsify said water emulsifiable material and to produce emulsion  
3   droplets having an average diameter of about 20 microns or less.

1           671. (Currently amended) The water-based drilling fluid of claim ~~690~~655 having a  
2   density of about 7.9 lb/gal. or more.

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